

**Claims:**

1. A CPU clock control device that controls a clock of its own CPU, comprising:

a program management portion that loads a program to be executed by the CPU and correlates the program with a request for an execution time of the program and an allowable range of the request for the execution time of the program;

a program execution time registration portion that receives the request for the execution time of the program and the allowable range from the program management portion to be registered therein in correlation with the program;

a program processing volume detection portion that detects a processing volume necessary to execute the program;

a program execution time determining portion that determines an execution start time and a processing volume per unit time of the program in such a manner that the processing volume detected by the program processing volume detection portion is made equal within a specific time range to the extent that the request for the execution time and the allowable range registered in the program execution time registration portion are met;

a CPU operating frequency setting portion that determines an operating frequency of the CPU at each time on the basis of the execution start time and the processing volume per unit time of the program determined by the program execution time determining portion, and sets the operating frequency in the CPU; and

a program execution portion that makes the CPU operating at the operating frequency set by the CPU operating frequency setting portion execute the program at the execution start time and the processing volume per unit time determined by the program

execution time determining portion.

2. The CPU clock control device according to Claim 1, further comprising:

an interrupt processing portion that performs an interrupt processing performed at an occurrence of an interrupt;

an interrupt processing volume detection portion that detects a processing volume necessary for the interrupt processing; and

an interrupted execution time adjustment portion that determines again the execution start time and the processing volume per unit time of the program when the interrupt processing portion performs the interrupt processing at an occurrence time of the interrupt in such a manner that the processing volume necessary to execute the program and the processing volume of the interrupt processing are made equal within a specific time range to the extent that the request for the execution time and the allowable range registered in the program execution time registration portion are met,

wherein:

the CPU operating frequency setting portion determines the operating frequency of the CPU on the basis of a new processing volume, which is one of the processing volume made equal by the program execution time determining portion and the processing volume made equal by the interrupted execution time adjustment portion; and

the program execution portion executes the program at new execution start time and processing volume per unit time, which is one of the execution start time and the processing volume per

unit time determined by the program execution time determining portion and the execution start time and the processing volume per unit time determined again by the interrupted execution time adjustment portion.

3. A CPU clock control device that controls a clock of its own CPU, comprising:

- a task management portion that loads a task to be executed by the CPU and correlates the task with a request for an execution time of the task and an allowable range of the request for the execution time of the task;

- a task execution time registration portion that receives the request for the execution time of the task and the allowable range from the task management portion to be registered therein in correlation with the task;

- a task processing volume detection portion that detects a processing volume necessary to execute the task;

- a task scheduling portion that sets a schedule of an execution start time and a processing volume per unit time of the task in such a manner that the processing volume detected by the task processing detection portion is made equal within a specific time range to the extent that the request for the execution time and the allowable range registered in the task execution time registration portion are met;

- a CPU operating frequency setting portion that determines an operating frequency of the CPU on the basis of the execution start time and the processing volume per unit time of the task scheduled by the task scheduling portion, and sets the operating frequency in the CPU; and

a task execution portion that makes the CPU operating at the operating frequency set by the CPU operating frequency setting portion execute the task according to the schedule set by the task scheduling portion.

4. A CPU clock control device that controls a clock of its own CPU, comprising:

a task management portion that loads a task to be executed by the CPU and correlates the task with a request for an execution time of the task and an allowable range of the request for the execution time of the task;

a task execution time registration portion that receives the request for the execution time and the allowable range from the task management portion to be registered therein in correlation with the task;

a task processing volume detection portion that detects a processing volume necessary to execute the task;

a task execution time request interpretation portion that determines a timer event that controls the task in such a manner that the request for the execution time and the allowable range registered in the task execution time registration portion are met;

a timer event registration portion that registers a request for an execution time of a timer event including the timer event determined by the task execution time request interpretation portion and an allowable range of the execution time of the timer event;

a timer event processing volume detection portion that detects a processing volume necessary to execute the timer event;

a timer event determining portion that determines an execution start time and a processing volume per unit time of the timer event in such a manner that a sum of the necessary processing volume detected by the task processing volume detection portion for the task executed by the timer event and the processing volume of the timer event detected by the timer event processing volume detection portion is made equal within a specific time range to the extent that the request for the execution time and the allowable range of the timer event registered in the timer event registration portion are met;

a CPU operating frequency setting portion that determines an operating frequency of the CPU on the basis of the execution start time and the processing volume per unit time of the timer event determined by the timer event determining portion, and sets the operating frequency in the CPU; and

a timer event execution portion that makes the CPU operating at the operating frequency set by the CPU operating frequency setting portion execute the timer event on the basis of the execution start time and the processing volume per unit time determined by the timer event determining portion.

5. A CPU clock control method, characterized by including:

a program execution time registering step of registering a request for an execution time of a program to be executed by a CPU and an allowable range of the request for the execution time of the program in correlation with the program;

a program processing volume detecting step of detecting a processing volume necessary to execute the program;

a program execution time determining step of determining

an execution start time and a processing volume per unit time of the program in such a manner that the processing volume detected in the program processing volume detecting step is made equal within a specific time range to the extent that the request for the execution time and the allowable range registered in the program execution time registering step are met;

a CPU operating frequency setting step of determining an operating frequency of the CPU at each time on the basis of the execution start time and the processing volume per unit time of the program determined in the program execution time determining step, and setting the operating frequency in the CPU; and

a program executing step of making the CPU operating at the operating frequency set in the CPU operating frequency setting step execute the program at the execution start time and the processing volume per unit time determined in the program execution time determining step.

6. A CPU clock control program that causes a computer to function as a CPU clock control device that controls a clock of its own CPU, the CPU clock control program causing the computer as means as follows:

program execution time registration means for registering a request for an execution time of a program to be executed by the CPU and an allowable range of the request for the execution time of the program in correlation with the program;

program processing volume detection means for detecting a processing volume necessary to execute the program;

program execution time determining means for determining an execution start time and a processing volume per unit time of

the program in such a manner that the processing volume detected by the program processing volume detection means is made equal within a specific time range to the extent that the request for the execution time and the allowable range registered in the program execution time registration means are met;

CPU operating frequency setting means for determining an operating frequency of the CPU at each time on the basis of the execution start time and the processing volume per unit time of the program determined by the program execution time determining means, and setting the operating frequency in the CPU; and

program execution means for making the CPU operating at the operating frequency set by the CPU operating frequency setting means execute the program at the execution start time and the processing volume per unit time determined in the program execution time determining step.

7. A computer-readable recording medium having recorded a CPU clock control program that causes a computer to function as a CPU clock control device that controls a clock of its own CPU, the CPU clock control program causing the computer as means as follows:

program execution time registration means for registering a request for an execution time of a program to be executed by the CPU and an allowable range of the request for the execution time of the program in correlation with the program;

program processing volume detection means for detecting a processing volume necessary to execute the program;

program execution time determining means for determining an execution start time and a processing volume per unit time of

the program in such a manner that the processing volume detected by the program processing volume detection means is made equal within a specific time range to the extent that the request for the execution time and the allowable range registered in the program execution time registration means are met;

CPU operating frequency setting means for determining an operating frequency of the CPU at each time on the basis of the execution start time and the processing volume per unit time of the program determined by the program execution time determining means, and setting the operating frequency in the CPU; and

program execution means for making the CPU operating at the operating frequency set by the CPU operating frequency setting means execute the program at the execution start time and the processing volume per unit time determined in the program execution time determining step.

8. A transmission medium holding a CPU clock control program that causes a computer to function as a CPU clock control device that controls a clock of its own CPU, the CPU clock control program causing the computer as means as follows:

program execution time registration means for registering a request for an execution time of a program to be executed by the CPU and an allowable range of the request for the execution time of the program in correlation with the program;

program processing volume detection means for detecting a processing volume necessary to execute the program;

program execution time determining means for determining an execution start time and a processing volume per unit time of the program in such a manner that the processing volume detected



by the program processing volume detection means is made equal within a specific time range to the extent that the request for the execution time and the allowable range registered in the program execution time registration means are met;

CPU operating frequency setting means for determining an operating frequency of the CPU at each time on the basis of the execution start time and the processing volume per unit time of the program determined by the program execution time determining means, and setting the operating frequency in the CPU; and

program execution means for making the CPU operating at the operating frequency set by the CPU operating frequency setting means execute the program at the execution start time and the processing volume per unit time determined in the program execution time determining step.